

DR. E. F. ARMSTRONG, managing director of the British Dyestuffs Corporation, Ltd.; Dr. J. B. McEwen, Principal of the Royal Academy of Music; and Prof. R. W. Seton-Watson, Masaryk professor of Central European history in the University of London, have been elected members of the Athenæum, under the provisions of Rule II. of the Club, which empowers the annual election by the Committee of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public service."

IN April of last year the eighth annual meeting of the American Geophysical Union was held, like its predecessors, at Washington. The transactions of the Union at this meeting have been issued as a *Bulletin of the National Research Council* (No. 61, pp. 295). The Union met usually in six sections, but one resolution passed in general assembly may be noted: since it appears that, in future, reports of much of the seismological work done in Japan will be published in Japanese only, the National Research Council was requested to provide (1) for the translation into English of such reports as are selected for the purpose by the American Geophysical Union, and (2) that mimeographed copies of the translations be distributed under suitable financial arrangements. The reports and papers dealt with in the sectional meetings include many of great interest. Three general symposia were held, one on climatic control, another

on the sun's ultra-violet light and the ozone content of the earth's atmosphere, and a third on correlations of various radio phenomena with solar and terrestrial magnetic and electric activities.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—A secretary of University College Hospital Medical School—The Dean, University College Hospital Medical School, University Street, W.C.1 (April 18). A technical officer at the Royal Aircraft Establishment, South Farnborough, to assist in design and experimental development work in connexion with aerial beacons and aerodrome illumination generally—A.271, The Chief Superintendent, Royal Aircraft Establishment, South Farnborough, Hants (April 21). A professor of mechanical engineering in the Engineering College of the Benares Hindu University—Box P4360, 33 Norfolk Street, Strand, W.C.2 (April 30). An assistant lecturer in physics at the University College of the South-West of England, Exeter—The Registrar. A mathematical master, able to teach elementary physics and chemistry, at the Prince of Wales' Royal Indian Military College, Dehra Dun, U.P., India—The Secretary, Military Department, India Office, S.W.1. A junior assistant chemist under the Directorate of Explosives Research of the Research Department, Woolwich—The Chief Superintendent, Research Department, Woolwich, S.E.18.

### Our Astronomical Column.

SEARCH FOR A PLANET OUTSIDE NEPTUNE.—Ever since the discovery of Neptune by the perturbations that it produced on Uranus, attempts have been made to extend the method to still more remote regions. Prof. W. H. Pickering is one of those who have attacked this problem; in his research he examined the observations of Saturn, Uranus, and Neptune, and noted discordances between prediction and observation. His latest paper on the subject is in *Popular Astronomy* for March. He notes that if Adams and Le Verrier had used Saturn as well as Uranus in their calculations, they would have had material for making a better estimate of the distance and period of the perturbing planet; the reason being that conjunctions of the unknown planet with Saturn occurred every 36 years, so that the observations covered several conjunctions.

Prof. Pickering gives the shape that the curve of residuals should follow about the time of conjunction of each planet with an external perturbing one. He finds some evidence of conjunction of the unknown with Neptune about 1906, with Uranus about 1841, with Saturn about 1850, 1885, 1917. He finally assigns to the unknown the same period as Neptune, 164.8 years, but a more eccentric orbit. He makes aphelion passage about the year 1891, in longitude  $72^\circ$ . The present position of the planet is given as R.A. 8 h. 51 m., N. Decl.  $16\frac{1}{2}^\circ$ ; mass about half that of the earth, magnitude 12. When in opposition it would retrograde at the rate of  $4''$  or  $5''$  per hour, sufficient to show a short trail on photographic plates. Whether the planet is there or not, the investigation seems sufficiently ingenious to be worthy of notice.

SPECTROSCOPIC PARALLAXES OF 125 B-TYPE STARS.—Mr. D. L. Edwards has been engaged for some

years in deducing spectroscopic parallaxes of B-type stars at the Norman Lockyer Observatory. *Mon. Not. R.A.S.* for January contain his fifth paper on the subject. The research is much more difficult than in the case of stars of late type. Two methods are employed: (1) photometric measures of the intensities of certain hydrogen and helium lines by means of a wedge; (2) classification based on spectral type and line character. Standard stars of well-determined parallax were observed in order to check the curves used for converting measures into absolute magnitudes. The magnitudes of the stars in this paper range from 0.6 (Achernar) to 6.9. The absolute magnitudes range from  $-3.4$  ( $\alpha$  Camelopardalis) to  $+0.1$  ( $\nu$  Cassiopeia). The largest parallaxes are Regulus  $0.060''$  and Achernar  $0.040''$ .

MINIMUM OF  $\epsilon$  AURIGÆ.—This star, of spectral type *F5p*, the light of which varies between 3.3 and 4.1, is now approaching minimum, which is predicted to last about 700 days. It is an appropriate time for publishing an elaborate study of its spectrum, which Miss Cecilia H. Payne does in *Harvard Bulletin* 355, basing it on five plates, ranging in date from 1890 until 1927; last year's plate was standardised by comparison with the hydrogen lines in the spectrum of Vega, and it served to calibrate the other four. A list is given of the wave-length, origin, and intensity of about 170 lines. Certain iron lines are found to be suitable for the determination of absolute magnitude. The following absolute magnitudes of stars of this type are given: Procyon 3.1,  $\alpha$  Persei  $-1.3$ ,  $b$  Velorum  $-2.5$ ,  $\iota$  Scorpii  $-2.8$ ,  $\epsilon$  Aurigæ  $-4.0$ . This last star is therefore a supergiant at a distance of more than six hundred light-years. Miss Payne notes that search should be made during minimum for possible spectral changes.